SUPPLEMENT.

The Mining Journal,

RAILWAY AND COMMERCIAL GAZETTE:

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

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PROCESSES OF MINING ON THE PACIFIC COAST.

TO THE EDITOR OF THE MINING JOURNAL.

Sir,—Although the regions bordering on the Pacific are not wanting in almost every variety of mineral wealth, labour and capital have, so far, been chiefly directed to the obtaining of gold, silver, and quicksilver. In California we find in use some of the simplest as well as the most elaborate appliances for the obtaining of auriferous wealth. The latter, together with the scale on which gold enterprises are undertaken, show that the inventive genius of man has there been tasked to its utmost efforts. European and American skill and capital, indeed the experience of all climes, has there been brought into operation. Just in proportion as this gold-producing power becomes less a matter of chance than of scientific calculation, does the yield increase. In California mining large capital appears necessary for securing satisfactory returns. In placer mining we see, indeed, in operation principles involved in the immemorial forms common to South American countries, but in such new guise as only to be recognised by the experienced eye; occasionally, indeed, we see them duplicated, as in the Spanish *arastra* and the Chilian fall of water, exposure by the Chilian of his *cascalho* in pits under a fall of water; but hydraulic mining in California also goes far beyond this. To what a magnificent extent it is carried out in that land of gold will presently appear. The operations of Nature are completely counterfeited, and man wields a power in one sense not his own—"the power of the waters," born in the still and silent snows of the Sierra Nevada, and which, guided by his skill, ploughs up the earth hundreds of feet downwards from the surface. Quartz mining demands fewer mechanical processes than placer mining, but demands a larger outlay of capital and more scientific knowledge in quarrying the rock, pulverising it, and separating the gold from the ore. Dry placer diggings are usually carried on in ravines in the neighbourhood of rivers, the dirt in the bars of which have been found to be rich. The experienced miner avoids the precipitous portion of the bed rock, seeking the shelves and ledges projecting horizontally beneath these perpendicular strata. Whatever the miner digs up, even the loose slate of these auriferous ravines and gullies, is thrown into a pan; and, as he seeks them out after occasional rains, a dam is extemporised, and the miner pans out in the standing water. A great portion of his success depends on the direction of the stratum; if it be horizontal the bed beneath will be rough and craggy, and the gold will be found secreted in crevices, safely lodged from those fell floods that sweep down among the mountain gorges. When the stratum is thus horizontal the miner seeks the lowest depth of the ravine whither it has been washed. In this ravine, commonly resorted to immediately after rains, the miner establishes himself in a hole carried down to nearly the surface of the rock, scratches the level he has reached with the point of his knife, scrapes out carefully any rock crevices that present themselves, and, if it be slate, takes one layer after another, and examines all the seams.

The tailings, where several sets of claims lie near together, have in many places filled the ravines to the depth of 60 feet. The sluices employed to carry off these tailings have to be much more substantial, and require much more water, than those employed for washing. In placer mining water is, after all, one of the heaviest charges. The water supplied to one hill alone has amounted to 300*l.* per day, and for that flowing into one ditch 600*l.* per week. The Lake Ditch Company, which carries on its enterprises in 265 miles of ditches, the cost of which, by the way, was 1,000,000*l.*, has its water supplied from small lakes in the heights of the Sierra Nevada, and from artificial reservoirs filled by the rains of winter and spring.

In prospecting for deep diggings, the miner seeks to discover the course of ancient brooks, and to reach their original bed. Sometimes the brook has left its channel; more rarely the modern stream courses over the older one; in any case many feet of earth will probably have been deposited. Miners, by following a lead discovered cropping up in a rich district of country, will frequently be brought to the tributary of some ancient river, and so be guided onwards to the old river bed. A tunnel has often to be cut into the earth to reach the channel cutting through the rim rock that had risen above its edge.

Tunnel mining is a conspicuous feature in the operations carried on in California. In placer mining these tunnels may be from daylight to daylight, but in quartz mining they are run fairly into the earth for distances varying from 50 ft. to a mile, the object being to reach the level of the bed rock. The placer miner looks to the pay dirt contained in the tunnel itself; the quartz miner fairly commences his work when he has reached the bed rock. To him any mistake in the level of the tunnel is fatal, if either too high or too low; he misses his mark, and a new tunnel must be formed. There is a tunnel in the far-famed Table Mountain, of the Sierra county, which runs 2000 feet, and it has numerous ramifications. At the mining town of Forrest City, built on a steep ridge on the middle fork of the American River, the tunnels, after piercing what is called the "outer rim" of the mountain, and striking its inner side, slope inward and downward to the very centre of the mountain, to be carried over the flat bed rock, where the richest deposits of gold are found.

In the Sierra county, formed of a collection of hills some 4000 ft. above the level of the sea, there lie, deep in the rock, vast masses of coarse gold. Hundreds of tunnels have been run through the gravelly soil in search of the celebrated blue lead, which every miner who delves far up in the mountain hopes to find. From one tunnel gold to the value of nearly 1,000,000*l.* has been drawn out. The tunnels in this region, which has been worked for about ten years, cost from 400*l.* to 20,000*l.* Many of these claims have great singularity of position; that of one company is on a precipitate mountain side.

Where neither the hydraulic process of levelling nor of tunnelling is employed, shaft-sinking is resorted to, especially when a hill is merely supposed to contain gold, when it is used to discover the lead of the mine. The Artesian well auger has been used to ascertain the depth of various strata known to lie above the gold. At San Francisco an Artesian well, 100 feet deep, brought up gold; and at Stockton gold made its appearance from a depth of 80 feet. Nothing is so welcome to the eye of the miner as hills of gravel; in these lie often untold wealth.

Hydraulic mining is only used in deep placer diggings; it does not wash the dirt, but merely prepares it for separation from the gold with which it is intermixed. Thousands of hills have by this means been torn from their base, the streams of water, led through gutta percha or linen and canvass hose, cutting successive portions up with wonderful rapidity. The power exhibited on this large scale by hydraulic pressure is really astonishing. It is the constant representation of an earthquake—the toppling precipice, the land slide, and the avalanche. It would be vain to estimate the millions of tons of earth that are thus displaced, to be shovelled into the sluices planted against the foot of the hills. The process closely follows upon that of Nature, whose mountain streams are countinually tearing down the earth arresting or supporting them in their course. In some cases the stream is thrown against the side of the hill, in others it is brought down from above, directed from some higher source, and for this purpose vast aqueducts are frequently constructed from the gorges of the Sierra Nevada. These artificial courses of water may be seen winding around the sides of mountains, passing over valleys, washing through tunnels purposely formed for their conveyance, and finally diverging into numerous branches, taking the direction of separate hydraulic claims. The force with which the water is discharged from such batteries may be easily imagined. Vast in some localities is the change effected by the moving of hills and filling up of flats and caverns. Even the main tributaries of some of the great Californian rivers have been seriously interfered with by the deposits discharged from sluices planted along their course. A perpendicular fall has been obtained in many places of from 200 to 300 feet. The strongest duck and leather are used for hose, and lately galvanised iron bands. As to sluices, not only must their construction and the pay of workmen be taken into account, but the waste of quicksilver. The returns, however, scarcely ever fail to enrich the proprietors. At one of these sluices the amount of dirt washed in one week has been 224,000 tons, with a yield of $30,000, or 6000*l.*—an average of 1½ per cent. in every cubic foot. The force with which the water rushes down these sluices is really terrific, and propels the rock downwards, from one riffle-bar to another, until the lowest of the tiers, all of which are charged with quicksilver, is reached. Ultimately the quicksilver is squeezed through buckskin, and the amalgam retorted.

In river mining the river is dammed up above the place supposed to be rich in auriferous wealth, and a flume is built to carry off the water the length of the claim at least. The dam is constructed of brushwood, stones, and dirt, and any leakage provided for by rough board pumps. This river mining closes with the first heavy rains of winter. The multitudinous tents on the river banks are then left to the storms, or folded up and carried off. Where were heard yesterday the voices of thousands of miners now sounds only the fitful wail of the rain storm, and the rush of the gurgling and swollen waters. In numerous instances water has to be raised. The "flutter-wheel," moved by the downward current of rivers, is a favourite means. The paddles of this wheel are buckets, which, as they ascend from the water, discharge themselves into a trough. Thousands upon thousands of placer miners are thus supplied with that indispensable element—water. The rocker used in river mining is a wooden trough, like a child's cradle, with a hopper or riddle at the upper end, and a pierced bottom of iron or zinc. The process is by filling with dirt, and pouring in water and rock. All passes through the riddle to the upper end of the cradle box, where the heavier particles are caught by the riffle-bars. The packing of dirt in different portions of this instrument is the great difficulty. On level ground, and where continuous supplies of water are not attainable, the long tom, a wooden trough from 8 to 14 ft. long and 8 inches deep, is brought into use. The bottom at the lower end is perforated, a riffle-box containing quicksilver being placed beneath. Large stones are shovelled out of the trough. Another mode is to place beneath a long, narrow, perforated, and immovable plate of iron a detached series of descending shelves or riffle-bars, to which an oscillating motion is given. The quartz is placed on the iron plate, and a stream of water directed from a hose falls on it.

[To be concluded in next week's Mining Journal.]

THE GEOLOGY OF SOUTH AUSTRALIA.*

If there be any who conceive that the science of Geology is a subject the study of which is to the general reader dry and uninteresting, we advise him to take a glance at the record of the Rev. Mr. Woods's Geological Observations in South Australia, and we are convinced that such illusion will be at once dispelled. The style in which the book is written is most attractive; and whilst the particulars are given with a care and accuracy which will render it extremely valuable to the scientific man, the author has wisely kept in view the fact, that it is not men of science alone who are likely to read the work, and he has, therefore, introduced such matter as shall render the data which he gives intelligible to all. In his introductory sketch Mr. Woods reminds his readers of the manner in which the science of geology had its rise. In 1683, Dr. Lister proposed to the Royal Society that a map of the soils of England should be prepared; and he urged as a reason for it, that if it were noted how far these extended, and the limits of each soil appeared on a map, something more might be comprehended than he could possibly foresee, which would make the labour well worth the pains. "For I am of opinion," said he, "such upper soil, if natural, infallibly produces such under-minerals, and for the most part in order, but this I leave to the industry of future times." The industry of later times led to a general classification of rocks and minerals being made. Geology became thus possessed of certain principles, and to make these of paramount utility, all that was wanted was an extensive field on which they could be applied. A new country, whose mineral riches were unknown, was required, and this was found in Australia. Its rocks were examined, and found to correspond with similar rocks in the old country; there was an easy conclusion to be drawn—that they contained similar minerals. A search was made, and was repaid by an inexhaustible supply of coal, iron (for the iron mines of South Australia will, probably, yet be found as rich as any in the world), lead, copper, silver, and gold, so that geology is largely indebted to Australia; but geology has more than repaid the assistance it received. Melbourne was, in 1850, a poor, miserable, straggling town, with not one public building that would have done honour to a county town in England. And what have ten years done? Why, Melbourne is the wonder of the southern hemisphere. Its wharves, its Government buildings, its banks, its churches, and its parks, are evidences of prosperity at which even the fast-going Americans stop and stare with amazement. And all this is due to geology, without which the discovery of gold might have been long delayed. It was geology, and geology only, that led to its discovery at the particular time at which it was found. Sir Roderick Murchison, after giving some attention to the rocks of Australia, predicted long before the discovery was made that Australia would be found to be auriferous. The Rev. W. B. Clarke, of New South Wales, made the same observations; and it was by being urged to the matter by geologists that the Government took the matter in hand, and offered the reward which led to its discovery.

And it is not alone to Victoria that geology has conferred benefits; New South Wales and South Australia have each ample proof; the former has its extensive coal trade, whilst the latter has its famous copper mines—foremost amongst which is the Burra Burra. It is true that here the copper ore was cropping out of the ground, and required no science for its discovery, but it may be doubted whether the mine would have been worth much but for working based on geological principles, and at any rate much valuable ore would have been lost for want of a mineralogical knowledge of its value. In Tasmania, again, coal, and perhaps gold, give evidence of the same important position taken by one science in developing colonial resources. Though so little has been done there is no country more interesting in its geological formations or more varied in its mineralogical productions than South Australia; lofty mountains, extensive plains, sandy deserts, and inland seas are all included in its far-stretching boundaries. With a climate like that of the South of Spain, it possesses the scenery of the Highlands in some places, while in others deserts like those of Arabia, and vying with them for bleakness, aridity, and burning heat. There are chains of salt lakes, which render unprofitable a larger area than England; there are marshes and salt swamps more dank, unwholesome, and extensive than any in the United States; there are rocky precipices, and chasms, and waterfalls to rival almost the Alps; there are extinct volcanoes of large dimensions almost as numerous as those of Auvergne; and, finally, there are caves which exceed in magnitude the Guacharo caves of Humboldt, or in stalactites the Antiparos of the Aegean Sea. Yet all these things are little known, even as existing facts, much less as illustrating scientific conclusions. Situated as a missionary priest, in the large colony of Australia there have been opportunities afforded for observation such as few could command, and thus the author has been enabled to see a very large portion of the colony, and to afford a partial observation to many facts he met with. He tells us that when out in the far Bush, in the prosecution of his duties, it has been a most delightful employment, when books were unattainable, to study the great unpublished work of Nature, and the result of these studies he has given in the charming volume before us.

The geography of Australia is next briefly treated of, and then the soils. The allusions in the latter chapter to the effect which geology has upon the beauty of towns and cities is particularly interesting, as also are his remarks on its effects upon the scenery. After briefly mentioning the honeysuckle country, he tells us of the Mallee scrub, which commences about 100 miles from the southern extremity of the coast, and goes (so far as yet known) without any interruption of a different description of country, right on to the north and north-west boundary formed by the River Murray. It is strange, he continues, that while writers on Australia give so much praise to the fertility of the country, they forget to mention that by far the greater portion of it is taken up by deserts such as this. Not only in the south-eastern district, but in the whole of South Australia, there is not a single portion of available land which is not bounded on the north, or east, or west by a similar desert, if the term can be applied to tracts of land producing nothing but useless stunted shrubs. The appearance of such places is very gloomy. From any eminence you see nothing but a dark brown mass of bushes as far as the eye can reach. The soil is generally a yellow sand, and when a patch of it is observed it gives an air of sterility in exchange for monotony. But the outline is generally unbroken, seeming like a heaving ocean of dark waves, out of which here and there a tree starts up above the brushwood, making a mournful and lonely landmark. On a dull day the view is most sad, and even sunlight gives no pleasure to the view, for seldom bird or living thing lends a variety to the colour, while light only extends the prospect, and makes it more hopeless. The descriptions of the honeysuckle country, and the limestone biscuits, will well repay perusal.

The rocks, the reefs, the extinct volcanoes, and the caves are in turn treated of, and in a manner which does the greatest credit to the author, who has undoubtedly recorded observations of the most valuable character, and made the record so ably that when once the book is opened it is sure to be read through. The description, whether of the Blue Lake crater, whose silent waters are of the most gloomy character, or the caves of the Mosquito plains, is at all times entertaining, the book, as a whole, being well entitled to be considered as in every way calculated to give a reliable notion of the country, and to create a love for the study of the very useful science of which it treats.

* Geological Observations in South Australia; Principally in the District south-east of Adelaide. By the Rev. J. E. Woods, F.G.S., F.R.S.V., &c. London: Longman. Melbourne: Dwight.

FOREIGN MINING AND METALLURGY.

We have received some interesting statistics illustrating the mineralogical production of Prussia in 1861. It appears that the quantity of coal raised in that year was 11,759,500 tons, of the estimated value of 3,271,249*l.*; while 3,320,574 tons of lignite, of the estimated value of 455,850*l.*, were also made available. As regards pig, iron, &c., 412,493 tons of ordinary pig, of the estimated value of 1,784,845*l.*, were produced; 7626 tons of steel pig, of the estimated value of 48,696*l.*; and 29,219 tons of casting pig (first fusion), of the estimated value of 261,248*l.* The total production of the blast-furnaces was, consequently, 449,338 tons, of the estimated value of 2,094,788*l.* The quantity of rough iron made was 286,689 tons, of the estimated value of 2,847,691*l.*; and of rough steel 18,952 tons, of the estimated value of 269,077*l.* As regards other metals produced, zinc figured for 58,572 tons, the estimated value being 944,825*l.*; gold for about 9 lbs., the estimated value being 490*l.*; silver for 19 tons 3½ cwts., the estimated value being 171,108*l.*; lead and litharge for 20,585 tons, the estimated value being 355,748*l.*; copper for 2275 tons, the estimated value being 217,559; smalt for 7 tons, the estimated value being 260*l.*; nickel for 237 tons, the estimated value being 53,400*l.*; arsenic for 304 tons, the estimated value being 3616*l.*; selenium, 5½ lbs., the estimated value being 41*l.*; cadmium for 2¼ lbs., the estimated value being 60*l.*; and antimony for 10 tons, the estimated value being 600*l.* To these must be added the following miscellaneous products:—Alum, 3049 tons, of the estimated value of 30,978*l.*; copperas, 2109 tons, of the estimated value of 9677*l.*; sulphate of copper, 184 tons, of the estimated value of 4215*l.*; sulphur, 110 tons, of the estimated value of 1159*l.*; and salt, 143,939 tons, of the estimated value of 235,780*l.* Dividing the mineral and metallurgical products of Prussia into three great classes, the values arrived at for 1861 were, consequently, as follows:—Coal and lignite, 3,729,098*l.*; products of blast-furnaces, 2,094,788*l.*; other products, 2,032,715; making a total of 7,854,601*l.* The number of workpeople employed in the mines of coal and lignite amounted to 78,973; in the other mines, to 36,324; and in the ironworks and salt works, to 62,411; making a total of 177,708. The number of women and children dependent on these men for a livelihood was 341,404, so that in all 519,112 persons derived their support last year in Prussia from mining and metallurgical industry,—no inconsiderable number.

A new rolling establishment for merchants' iron has just been constructed at Marchienne, and will commence working on Jan. 1; this makes the fourth works of the kind put in activity in the Charleroi group during the last 12 months. The tendency of Belgian siderurgy to undertake rather the fabrication of iron than the production of pig becomes more decidedly apparent every day. This new course on which Belgian metallurgists have entered is attributed to two causes—first, the loss of the market of the Zollverein, which formerly absorbed the greater part of the production of Liége blast-furnaces; and, secondly, the active competition experienced from English and Scotch pig, which by reason of their extreme cheapness are assured an easy outlet in France as well as in Belgium. It is expected that in a by no means remote future the production of Belgian blast-furnaces will be reduced to that required for local consumption, and that which undergoes elaboration in ironworks, &c. The result is, that great capitalists at Liége, who formerly confined their operations to the working of collieries and blast-furnaces, have now acquired rolling-works, or plate-making establishments, in order to utilise the pig for which they can find no other outlet. As regards metallurgical operations conducted with wood, they are completely disappearing, and only exist at present in the district between the Sambre and the Meuse, where three or four furnaces are worked on this principle; they produce only about 3 tons per day, and hence their small collective importance will be readily appreciated. The price of wood-produced pig, which is almost wholly employed in the casting of cannon and the fabrication of gun metal, ranges from 6*l.* to 6*l.* 4s. per ton The old system of producing iron is thus threatened with almost total extinction in Belgium, which in this respect, as in many others, has followed the example of Great Britain. In its session which has just elapsed, the Provincial Council of Namur has instituted a competition for a prize of 80*l.* and a gold medal for the best essay on the employment of ordinary Belgian coal in the fabrication of pig and iron. The essays are to be delivered before Jan. 1, 1864. With regard to the Belgian coal trade, we may add a few details. The Mons basin is, in respect of its total production, the most important in Belgium, and a great part of the coal extracted from it is devoted to exportation. Hitherto the basin has sent coal into the west of France, Rouen, Abbeville, &c.; but those interested in the district complain that every day the competition of English coal becomes more energetic, and that especially in the departments of the Nord and the Pas-de-Calais, the workings of the Borinage are losing a very important outlet. Under pain of sustaining great injury, the Mons coal-workers must, then, endeavour to run off their products elsewhere; and of all the districts which require to be supplied with combustibles, that which is at once the most readily accessible, and the largest consumer is, perhaps, that which lies along the southern frontier of Belgium, commencing with Maubeuge, and extending by Fourmies, Hirson, Tréion, Charleville, Sédan, Longwy, Metz, &c. In this district a siderurgical industry has been created which possesses important elements of success, as it will be in the centre of a rich coal bed. The importance of this market of the Ardennes and of the east of France has not escaped the attention of Belgian coal-workers. Charleroi possesses to transport its coal into it the lines of the Sambre and Meuse, and the Eastern, prolonged by the Ardennes system; and Liége will in a few weeks enjoy the benefit of a direct line from Liége to Givet, *vis* Namur and Dinant. The Mons basin has, however, no direct line to the east of France at present, although the concession of a line from Frameries to Chimay, granted last session, will attain that object, if it is practically carried out, as such a line would form a junction at Signy-le-Petit with the section of the Eastern, leaving Hirson, and abutting on Charleville. A line from Chimay to Signy is thus an absolute necessity for the Mons bed, since it would enable the coal-workers of the basin to find a new outlet for their products as old markets became successively closed to them. The basin of the Centre has received an abundance of orders of late.

Different contracts for pig have been entered into in the Haute-Marne, at the rate of 5*l.* 6s. 6d. per ton, delivered at the St. Dizier or Vignory stations. While pig thus maintains its price tolerably well, irons have a marked tendency to fall, wood-produced having been disposed of at 9*l.* 8s.

per ton, and mixed at 8s. less. The forges have received some small orders, and bars have been quoted at 10*l.* 16s. to 11s. 4s.; ordinary axles at 11*l.* 12s. to 12*l.* per ton. The French Government has just given a new proof of its solicitude for the welfare of metallurgy in the east of France, by voting a supplementary credit for definitive surveys of a proposed canal from Vitry to St. Dizier, the works of which are to be undertaken at the commencement of next spring. Attention has been recently called, under this head, to the sensible fall in the price of wood in the departments of the east of France, and the same state of things is also noticed in the Franche-Comté. Thus the underwood belonging to the State, in the department of the Doubs, which sold on an average at 93*l.* 16s. per acre in 1861, only realised 70*l.* 8s. per acre in 1862. The conditions of production in the wood-supplied works of the district are, then, considerably ameliorated. The Minister of Public Works has just decided that reservoirs of oil, formed with plates, and imported from England, are to be treated, as regards the payment of import duties, in the same light as gasometers, stoves, boilers, &c., and as such are to be subject, on their importation from England or Belgium, to a charge of 4*l.* per ton. The chief point of interest at present in connection with French metallurgical affairs is the charge for transport, everyone calling out for a reduction of railway tariffs as regards the carriage of heavy goods. It seems probable that the railway companies will consent to an abatement, as a reform in their tariffs is irresistibly enforced upon them, both by the necessity of increasing the traffic in such goods, and also by the competition of navigations. Some time since, in accordance with an agreement arrived at by the Northern, Ardennes, and Eastern Companies, a new tariff for the transport of English pig, forwarded from the ports of the ocean to the St. Dizier terminus, was put in vigour. It may now be stated that the Eastern of France Company has submitted for official approval the special tariffs for the carriage at reduced rates of rough irons, old iron, rough pig, old pig past service, broken pieces of iron returned, &c. The industrials of the eastern departments are not very satisfied, however, with these new tariffs, and complain that persons making deliveries for long distances are unduly favoured, as compared with those doing business between stations near each other. Other criticisms are raised upon matters of detail; but at any rate the new tariffs show that the Eastern of France Company is willing to assent to the principle that reductions from previous tariffs are necessary. Belgian coal, in addition to the rivalry noticed above, experiences in the east of France the competition of the coal of the royal Prussian mines of Sarrebruck. The struggle which prevails is obstinate, and the Belgian coal-workers are putting forth their utmost energies, and making important sacrifices, as the possession of this market is a vital question to them. As an illustration of the elements which have to be taken into consideration in connection with this small industrial war, the price per ton at Nancy of rich Dudweiler coal and the readily blazing Roden coal, may be placed in comparison with each other:—

	Dudweiler.	Roden.
Cost at the mine	11s. 0d.	10s. 0d.
Carriage to Forbach	1 1¾	1 9¼
Duty on entering France	0 10	0 10
Double décime	0 2	0 2
Carriage from Forbach to Nancy	5 10	5 10
Total	18s 11¾d.	18s. 7¼d.

Thus the margin between the price at Nancy of Dudweiler and Roden coal is only 4¼d., while the difference in the cost at the pit's mouth is 1s. per ton.

The shareholders in the Belgian Railway Plant Company, late Messrs. Charles Evrard and Co., have formally approved the proposed change in the constitution of the undertaking, which commenced operations under its new title on the 1st inst. The management intimated that the old company was in an extremely favourable financial position, and that the profits realised in the six months commencing May 1 and ending Oct. 31, 1862, amounted to 5600*l.* The accounts presented were passed unanimously. The Epinac (France) Colliery and Railway Company has just declared a dividend of 2*l.* 10s. per share for the exercise of 1861-2. The blast-furnaces and foundries of Pont-à-Mousson, in the Meurthe, offered for sale twice, the second time on reduced terms, have just become the property of M. Barbe-Schmitt, of Nancy, for 23,040*l.* This sum involves, it is stated, a loss of 60 per cent. for the first proprietors. Preparations are being actively made for resuming operations with the Commentry forge. The new proprietor will, it is said, devote himself specially to the fabrication of small irons and wire-drawing.

Transactions in copper have not presented much interest. At Paris affairs have been calm; English has obtained 98*l.*, and Lake Superior, in consequence of the very reduced stock, has been sustained at 107*l.*; Chilian, on the other hand, has fallen to 91*l.* At Havre coppers have been feeble; a parcel of Lake Superior, Minesota mark, has been dealt in at 102*l.* There has been no change to notice at Cologne and Berlin, but the demand has been less active. With the exception of some sales of Drontheim-Roraas there has been scarcely anything of importance to notice this week at Hamburg; the absence of disposable stock, however, causes prices to be firm. During the past month the Dutch tin market has been depressed, transactions have been small, and prices have undergone a notable reduction. The recent fall of 4*l.* at London has forced holders to make new concessions. Annexed are the latest statistics as to the quantity on hand:—

	1862.	1861.	1860.
Stock, Oct. 31 ..... Ingots	80,955	74,683	81,352
Deliveries in Nov.	7,265	12,655	11,388
Stock, Nov. 27	73,690	62,028	69,964

The stock for the approaching public sales is estimated at 57,998 ingots, as compared with 57,250 ingots at the corresponding period of 1861, and 61,061 ingots at the corresponding period of 1860. The Paris market has been drooping; Banca has been quoted 122*l.*; Detroit, 121*l.*; and English, 115*l.* Berlin has also been feeble, and transactions have had no great importance at Hamburg. Prices of lead have been sustained at Paris, although business has been a little less active; rough French has been quoted 21*l.* 12s. to 21*l.* 16s., and Spanish 22*l.* Although the foundries had established slightly rising prices, the article remains without change at Hamburg. Berlin has been heavy, and without sales; Rotterdam has maintained nominally firmer prices. There has been no serious revival of activity in zinc, notwithstanding that a little more firmness has been observed in the London market. At Paris offers for rough Silesian have ranged between 18*l.* 12s and 18*l.* 16s. The Hamburg market has remained without activity, and slightly lower rates are anticipated.

ANCIENT GEOLOGY.

If one would learn the elements of ancient geology, I cannot conceive a better school than the top of one of the high cliffs of Cornwall; let him there hear the beat of the thundering pulse of the Atlantic against these granite fortresses—here topling down immense masses of detached rock, there forcing caves under the whole structure of the ground, now mildly kissing the rounded surface of the boulders or breastworks of the precipiece, anon attacking them with indescribable fury; let him listen to the crash of the heaving pubbles as they are rolled in heaps and furrows by the action of the waves, and he will have some conception of the nature and power of the forces engaged in carrying on one portion of the geological work of this world. In these powers we detect a resemblance to the forms employed by human agency in the reduction of rock. In the rush of the wave, we have the blow increased by millions of multiples of man's strength; in the roll of the pebbles, we have the comminuting action of a thousand rock-crushing machines of human invention, and through the pebbles the filtering action that sends the powder or sand sifted seaward, and sufficiently ground. Then, again, we have the spring and general tides dispersing the debris, the produce of these wonderful agencies. If we examine our coasts, we cannot fail to notice the action of elevating and depressing forces at work from within the crust of this sphere: here you will find the beaches of ancient times occupying various elevations on the face of the cliffs, showing how the preparations for new formations of rock are carried on, and occupy great tracts of the moved surfaces of the earth. Some have seen a difficulty in accounting for the accumulation of such immense deposits as clothe the earth with the varieties of rock, but if we only look at the produce of the sea birds in the form of guano, on the islands west of the American continent, which in places rise to the great height of 40 yards, we ought to see little difficulty in such an accumulation as the clayslate formation by the action of the ocean. We see in the next formation to the great slate deposits evidence of oceanic life; the fishes of the Red Sandstone establish the origin of this rock beyond any dispute. The multiple of the geological formation of these weak birds is a great one, of that depth to which powerful man has looked into the crust of his habitation; 20 times their deposit is the extent of his excavations, and 200 times their labour is the equivalent of the great clayslate formations of the Cambrian and Silurian rocks. Can we, then, imagine that the whole labours of the seas, from the pristine oceans set at work by the Creator in laying the sedimentary rocks, may not be 200 times greater, without shocking our notions of magnitude, than any strata deposited by the guano bird? Again, by whatever agency the Creator crystallised the granite, there is a marked and distinct agency pointed out, both by the written account and the observed formation of the crust or coating of the earth after the waters were brought to bear upon it. It would take a long chapter to exhaust this part of the subject, and to notice the changes through the stratified debris of the crystalline rock, through the gneiss, the mica-schist, and primitive slates; I would, therefore, rather devote the time upon some of the ancient epochs of the Cambrian series than carry the argument in proof of their oceanic formation any further. After glancing briefly at the immensity of time occupied in the construction of these formations, which we can only do by a note of admiration, we may divide the whole work into great periods or divisions. The first period would be for the destruction and deposition of the ancient rocks to form the new ones. The second, the hardening and charging with metal when the needle pointed 35° east of its present bearing. Thirdly, the elevation of the slates by interior pressure, and the formation of new lines of metallic ground. We have hinted at the agency by which the degradation of the old rock and its destribution into a new was accomplished—viz., the ocean; during this period we have no record of the true state of the magnetic currents, and we have no evidence as to whether the constituents of the new rock were hurried into receptacles opened for them by changes in the elevation of the earth's surface, or whether they solidified slowly on the shores of the oceans, but once deposited in their bed, by examining the structure of the strata rock, we derive many particulars connected with the history of the formation of the strata. For example, we know, as we stated before, that the currents of electricity once ran nearly 35° further east than they do now; this fact alone points to a great lapse of time of the needle receding westward by slow degrees, these currents evidently indurated the slates, and cut them into divisions or planes, as we now see them—not the planes of cleavage, which are another class of phenomena altogether, but the planes that give the general direction to the whole formation, and by a parity of reasoning on our lodes, we may safely assume that these ancient slates were furnished with an arrangement of metallic lodes, upon the same principle as those connected with the present lines of electricity—viz., at right angles with them. I think this view of the case is pretty certain to be the true one, not only because our present cosmography establishes that this is the true method of reading the problem, but also because whenever I have seen the slimes of ancient mines, deposited for hundreds, probably thousands of years, I have always noticed the particles of the slime answering to the country to arrange themselves into such a perfect imitation of the embedding stone that you could not know it was not stone except by breaking it, when it yielded, but also the particles of lead arranged themselves into small fine lodes of the width of fine needles, and their directions corresponded exactly with that of the parent vein, from which they had been so long divided. Whatever the state of the rocks and veins might have been from the time the ancient seas began to work upon the granites, down to the time of the needle receding to its present point, and whatever state the metalliferous veins may have assumed, it is easy to infer that an almost illimitable space of time must have elapsed in introducing this organisation of things; those periods have gone, and, like the lost records of races, have left little of the history of the times behind them. But the present epoch, or the era that man has to do and deal with, is more fraught with the landmarks of time. We cannot say at what period of the earth's history precisely the present state of things, in a geological and metallurgical light, began—its origin seems to be marked by the elevation of the Snowdonian range; we may, however, say that at that period the currents of electricity had began to run from 5° to 23° to the west of true north, instead of 12° to the east of north, and we may safely come to the conclusion that this was a comparatively modern date in the geological history of the earth, because we find the petrified shells of our present seas on the very highest top of the most elevated of those mountains, the effect of this change. Whether these were elevated at once, or by slow movements, we do not stop to enquire, for the slowest action would make but a small item in the sum of the whole time required for this mighty work; but this we do know, that since that comparatively modern period veins have been formed in these slates, in their possibly invisibly thin layers, which are now from 80 to 90 ft. in width. How long, then, has it taken to fill up such width of lode? In a small level in an ancient mine, suspended some 150 years before it was opened to my view, I endeavoured to ascertain by the encrustations of carbonate of lead which had formed in needles upon the sides, how long it would take to fill the level with lead ore, supposing the formation of sulphuret of lead went on in the same ratio as the carbonate, reckoning body for body as far as the metal went, and I found it would take 120,000 years to fill. If this were an index of the time taken to fill these lodes of 80 feet wide, it would give us 2,000,000 years since the progress of this course of events set in. How long a period shall we then put down as that since the Author of our existence began to provide, in a geological sense of the word, for the wants of His highest earthly creatures?

MINING PHOTOGRAPHS—No. IV.

THE MINING PIONEER.

It is surprising to witness the variety and difference of characters engaged in pursuit of this difficult and dangerous avocation; yet each, when properly imbued with the cacoethes, following it with an ardour and interest amounting, in many instances, to a kind of monomania or frenzy. Yet how few, in this country at least, meet with a due reward for their exertions, still all endeavouring to arrive at the same goal—wealth and fame. I cannot at this time, nor ought I to, omit the name and memory of a distinguished mining pioneer, one who neither spared time, wealth, or trouble in hunting the hills, dales, river-beds, and other spots likely to afford success for indulging his favourite hobby—for such it was to him. To him we owe discoveries, the importance of which, in reality, we have not yet begun to appreciate. Doubtless, ere long, and when railways shall have penetrated into the wilds and recesses of Perth and Argyleshire, the value of his labours will be felt by a labouring population, and by all the beneficial consequences mining occupations convey in their train.

The late Lord Breadalbane was, indeed, a remarkable instance of perseverance in this particular branch of science. He not only took a delight in roaming over the hills and dales of his vast domain, with pick and gad—which, by the way, he knew how to use effectually—but he courted and enjoyed the companionship and conversation of scientific and practical men. He might have been said to have been the Macenas of mining. By these means he arrived at no mean or trifling knowledge of the science as a practical as well as theoretical miner, his wealth and position always giving him unusual opportunities of inspecting the rarest collections of geological and mineralogical specimens, as well as visiting their habitats, and viewing them *in situ*—a wonderful advantage to an ardent student, as was he, notwithstanding his dignified social position. Oft have we witnessed the scenes of his labour, and oft have we seen his untiring energy in searching the most remote and almost inaccessible places for their metallic produce. We fear we shall not look upon his like again. Peace be to his ashes.

Come we now to a much humbler individual, but one no less useful in his sphere of life, one equally energetic and persevering as the greatest, and one whose practical utility was not only appreciated, but, in some degree, met its reward. How seldom is it that humble and modest worth meet these desiderata. Poor Dick Stephens, perhaps better known by his sobriquet "Paddle your own canoe"—an apothegm admirably adapted to mining, of which more anon. Well known was he in the neighbourhood of the Fowey Consols; oft have we journeyed with him from early dawn to dewy eve, tracing cross-courses, elvans, and lodes; to him time and money were but of little account had he an object in view; to him the rocks and stones were but as household words, the lodes as the alphabet, and the mode of working them as but his first lesson. He was deemed not only a first-class miner, but a first-class mining ferret; yet he had his eccentricities, but, as our motto is *de mortuiis nil visi bonum*, we pass them over in silence; they possibly cost him his life. So highly were his merits held in esteem that many of the Cornish land proprietors gave him a *carte blanche* to go anywhere and examine any part of their estates, without let or hindrance. Cornwall presents a vast and strange anomaly to most parts of Great Britain; in that county, where mining and its value are known, miners are courted, and search for mineral encouraged by kind attentions and liberal dues, instead of frigid doubts, grasping dues, impossible conditions and restrictions, hasty demeanour, and ignorant pretensions, as in many parts of Scotland and elsewhere, in places where mining is unknown, or but little practised. We introduce this digression for obvious reasons—contrast gives double effect. This unlimited license, as might have been reasonably expected, led to a thorough examination of the estates, far more efficient and effectual than if the proprietor had employed the whole batch of professors and pretenders; aye, at how much less cost? One of these worthies, the Member for East Cornwall, was so much pleased, and so well satisfied, that he would not grant a sett over which Dick had been for discovery except the applicants made him adequate remuneration; this was a *sine qua non* well known to many of my readers. The subject of this notice was accidentally killed on returning from one of his excursions.

Another pioneer, whose name deserves record as a most remarkable instance, was Robert Pease, of Hawes, Yorkshire. He was almost a counterpart of poor Dick Stephens, alike almost illiterate, save self-education; like him the lark and the crow witnessed his outgoings and home-comings, and like them, the field and the wild moor were the scenes of his pleasures and his labours. To him the hill-side, that appeared only fit for a sheep-walk or an eagle's eyrie, were as conversant as Oxford-street to a Cockney; to him the ravine and the waterfall were as well known as the Thames to a waterman, or as the Bank to the capitalist. To him do we owe many not only useful hints but absolute experiences in the rocks constituting the great Yorkshire mining district for lead and copper ores; the latter not half-tried, and but barely examined. To this pioneer do many mining companies owe the information that engendered their very existence; his knowledge was great, though his patronage was small, and that little shabby. He had no Cornish worthy to take him by the hand; he had those who not only stripped him of his knowledge, but would have stripped him of his skin could they have done so, poor fellow. He paid the debt of Nature with the coin he brought into the world. He had not wherewith, except Mother Earth, to lay his head. He allowed others, but did not "Paddle his own canoe." The quaint maxim is very suitable, and should be acted on by every mining pioneer—they should always paddle their own canoe If they make discoveries make the best use of them. They may rely on it that few Mr. Kendalls are to be found. To such men as the noble Marquis, first quoted, reward would be but of little moment, yet even he would not give away his discoveries unless adequate consideration were paid in the shape of dues. He certainly was liberal in his outlay, but he would not allow advantage to be taken. He knew how and adopted the apothegm, Stephens did so to a degree, but in the instance of the poor Yorkshire pioneer, who was simple enough to tell all he knew, and display his discoveries, when he wanted to beg or borrow nobody had a paddle or a penny to lend.

The principal end and aim of our essay is to demonstrate from the life, by true pictures, that the profession is a worthy one; that it has been, and is, practised by all classes, from the peer to the peasant. That it frequently, but not on all occasions, meets with a suitable reward; that consummation is to be realised partially by the party's own management and conduct. That the benefits derived are by no means selfish, even though a suitable reward be claimed, I think has been shown and demonstrated in previous essays—is, wherever the footsteps of the miner tread wealth and general prosperity assuredly follow, bringing happiness, contentment, and civilisation as companions. But, O pioneers! let me implore you to observe poor Dick Stephens's motto—"Paddle your own canoe."

GEORGE HENWOOD.

Meetings of Mining Companies.

THE AUSTRALIAN MINING COMPANY.

The annual general meeting of shareholders was held at the London Tavern, on Monday,—Mr. GEORGE PALMER in the chair.

The notice convening the meeting having been read,—

The report of the directors was submitted, which stated that the shareholders had been called together for the purpose of communicating facts of interest and importance, and of eliciting the opinion of the shareholders thereon. In the first place, the directors have succeeded in effecting an arrangement with the holders of the free shares, whereby, in consideration of the payment of 1000*l.*, all claim against the company in respect of such free shares is surrendered. These 1000 free shares were appropriated to the originators of the company by way of remuneration for services rendered and for information communicated on the formation of the company, and great doubts have existed as to the rights vested in these free shareholders. The directors have refused to recognise any right to participate in the funds recently distributed, because the same were realised from sales of stores and land, and not from profits earned. The directors were threatened with legal proceedings, and sooner or later, if the company had continued to distribute money periodically among the shareholders, Chancery proceeding would have ensued. Again, it was confidently asserted that, without the concurrence of the free shareholders, the company could not be dissolved until the full 20*l.* per share stipulated by Deed of Settlement had been paid-up. Under these circumstances, and remembering that the free shareholders had no liability so long as the affairs of the company were unprofitable, but were entitled to participate the same as other shareholders so soon as there were any profits to distribute, the directors are of opinion that the arrangement made is much for the benefit of the company, and they hope it will meet the unanimous approbation of the shareholders. The next point of interest with regard to which the shareholders ought to be informed is, that the company's agent in the colony advises the board that he has received applications from working miners, who desire to purchase the surface ores now lying at the pit's mouth at Tungkillo, and also to work for ore upon a royalty. Although it may not be expedient to enter into any such arrangement hastily, it must be very satisfactory to the shareholders to know that practical miners, living on the spot, have a better opinion now than heretofore of the mineral value at Tungkillo. The principal cause of the general enquiry appears to be the recent introduction of machinery into the neighbourhood, by means whereof the ore can be crushed at about one-fourth of the cost hitherto incurred. Mr. Davenport, the company's agent in the colonies, writes—"* * * If miners are let into the Tungkillo property for the purpose asked, the spirit of enterprise inducing their efforts ought naturally to desire a right of search for minerals, say for a given period, over a given area, at a royalty. There are lodes, known to miners formerly working at Tungkillo, not yet tried. Is it not in the range of probability that such reduced cost of raising ore might induce some of these same miners to venture? At any rate, the company could be no losers by such adventures, because the surface value would not be injured; whilst they *might* disclose a mineral wealth of importance. Arrangements have been made for effecting a considerable saving in the office expenses. The directors only regret that, in making these changes, they will be compelled, after Christmas, to part with their secretary, Mr. E. Walford, who has been for nearly nine years a faithful and zealous servant. Mr. Underwood P. Harris, who has been accountant to the company for eleven years, will, in future, act as secretary also. The directors propose distributing to the shareholders 1s. 6d. per share on and after Jan. 6 next.

The CHAIRMAN said the report just read contained all the information which the directors had to submit to proprietors, and, with the view of eliciting discussion, he would, without any further remarks, move that the report be adopted.

Mr. HENRY COLLIER (deputy chairman) said that, before the proposition was put to the meeting, he wished to make a few remarks. In connection with the first point referred to in the report—the extinguishment of these free shares—he (Mr. Collier) had taken a very active part. He had for some years—indeed, from the commencement—regarded these free shares as a perfect incubus to the company, hanging like a millstone about their necks with an aggravatingly-increasing weight. For some time he was almost alone in that opinion; but now nearly every shareholder to whom he had spoken upon the subject was strongly of opinion that the sacrifice which the directors had made, by foregoing one half-year's rent to be quit of this extremely unfavourable arrangement, was most beneficial to the company. An additional reason was that, at the time they distributed their first 2s. 6d. per share, the solicitor of the company submitted an opinion to counsel as to how far the directors were bound to recognise the right of these free shares to participate in that distribution. Although counsel's opinion was not very clear upon the point, it was generally unfavourable to the interests of the other shareholders; but many other reasons were given, which made it very desirable to extinguish these free shares—for instance, the holders had the power to prevent the dissolution of the company until the 20*l.* per share (as prescribed by the Deed) had been fully paid-up. In fact, it was a practical illustration of the schoolboy's proverb—"Heads I win, tails you lose." Under these circumstances, every gentleman to whom he had spoken upon the subject had agreed with him that the question was not as to the original rights of these free shares, but what the shareholders were bound to do under the Deed of Settlement. The other matter alluded to in the report was, if possible, of greater importance than that of the extinction of the free shares—it was that of the company's mineral property being worked or explored by practical men upon the spot. It was quite true that, as a mineral property, worked under a board of management in this country, it had failed, so far as the prosecution was extended; but, if working miners, commencing their operations by using the surface ores lying at the pit's mouth, could be induced to follow the workings, giving the company a proportion of the profits, he (Mr. Collier) really thought it might be a question whether it was not possible for the company's property to be made capable of restoring something like its cost. It was a great mineral district, and there could be no question as to it containing numerous lodes, which would produce a vast quantity of ore. The company could not continue to make returns simply because the ore was so poor that it would cost more to bring it to this country than it was worth; but it might be another thing if upon the spot that ore could be reduced into copper, and, if people in the colony were willing to do that upon their own account, the property of the company might possibly be so developed as to render it of some considerable value. He hoped every shareholder present would frankly express his views; but, at the same time, he trusted that there would be evinced some little appreciation of the difficulty in which the directors had been placed in dealing with the question of these free shares upon their own responsibility. In a case of this kind it was impossible to bring about a result unless some persons were willing to take upon themselves the responsibility, and it would not have been right if the directors had abstained from that responsibility because some gentlemen might think that it was a piece of needless responsibility for them to assume. If directors had not the legitimate power to effect such an arrangement as this, it never could have been carried out. As a shareholder, he thought it was the most favourable operation that had taken place with reference to the management of the company since he had held an interest, and he hoped the shareholders generally would take the same view by approving the directors' acts.

Mr. COXHEAD suggested that the clause in the Deed referring to the free shares should be read

Mr. FRANKLIN said it was of little consequence what the claims of the free shares were, since they had been surrendered.

Mr. MASTERMAN (the company's solicitor) read the clause referred to, which stated that the holders of the free shares should have all the rights and privileges of the other shareholders, without any of their liabilities.

Mr. COXHEAD did not see, from the clause just read, that the free shares could be converted into money value.

Mr. H. COLLIER said that, as the two classes of shareholders had different interests, there could not be a divided opinion that it was very desirable to extinguish these free shares, which had been done by making a small sacrifice—one half-year's rent had been paid for the extinction of undefined disadvantages.

Mr. JOHN FIELD thought the directors were entitled to the best thanks of the shareholders, and that it was very desirable that the question of the free shares should be definitely settled, and that the approbation of the shareholders should be affixed to the act of the directors. While thanking the directors for having concluded such a favourable arrangement with the holders of the free shares, he could not help thinking that the proprietors were entitled to receive at the hands of the directors some further information in connection with the nature of the arrangement entered into with the miners who proposed to work the company's minerals. He considered it was important that any such an arrangement should be of a limited character, for he had for many years believed that this company possessed a most valuable mineral property, and had always regretted that their mining operations had been so hastily suspended. Under these circumstances, before the report was adopted, he should like some little explanation as to the kind of answer the directors had given to Mr. Davenport's suggestion.

The CHAIRMAN said all the information the directors possessed upon the matter had been laid before the shareholders. The only reply sent was that Mr. Davenport had better take no active steps at present, but that, whenever he had a definite proposition to work certain portions of the company's mineral property upon a royalty, it should be submitted to the directors, who would bring it before the shareholders. He (the Chairman) considered it a very important matter, as it showed the value of their property, and also how fortunate it was that, when it was submitted for sale by auction, the directors had put upon it a reserve price. To show the increasing value of the property in the district in which their property was situated, he might, perhaps, state that some time since, when the Government were making roads in the neighbourhood, they gave compensation to parties of 4*l.* per acre. Now, that alone put a value upon the company's land, and showed shareholders that their 20,000 acres, in the same district, must be worth something more than 1*l.* per acre. With respect to the Charlton Mine, for which Mr. Fisher had offered 3000*l.*, there was no doubt they would obtain for it a much larger sum, as there was no question it was a very rich mine; and to his (the Chairman's) mind it was a very unfortunate circumstance that the company had suspended their operations before the explorations had been extended 10 fms. deeper. Still, he considered the company was in a most fortunate position, and he trusted that shareholders might yet get their money back again.

Mr. FRANKLIN quite endorsed the opinion of Mr. Field, and thought that the directors had taken a very wise step in relieving the company from any liability that might have attached to those free shares. He considered that, to ensure the extinction of these free shares for fourteen pence per share was a very economical and admirable purchase.

With reference to the future, as regarded their mining land, it was quite clear that nothing yet had been settled, and that at present the policy of the directors was one of reserve rather than one of action. He thought it might be acceptable to the directors if the shareholders expressed a direct opinion with reference to the extinction of the free shares, and with that view he would move "That the shareholders cordially approve of the policy of the acts of the directors with respect to the free shares, as reported to the special meeting."

Mr. COLLIER thought, if the shareholders were not unanimous in passing such a resolution, it would be better if the notice from the chair were adopted.

Mr. COXHEAD said he certainly should not vote for it nor against it.

It being agreed that the proposition moved by Mr. Franklin should be an addendum to the motion from the chair, the question was put, and the resolution carried *nem con.*

A vote of thanks to the Chairman and directors was passed, which terminated the proceedings.

ST. JUST UNITED TIN AND COPPER MINING COMPANY.

The first annual meeting of shareholders was held at the company's offices, Warneford-court, on Wednesday,

Mr. JAMES WRIGHT, C.E., in the chair.

Mr. T. C. SMITH (the manager) having read the usual notice convening the meeting, submitted the report of the directors, as follows:—

The directors in meeting the shareholders at this, their first annual meeting, feel no ordinary degree of pleasure in laying before them the report of their proceedings, and a statement of accounts for the past year. It may be borne in mind, that this company was registered on Nov. 22, 1861, but operations at the mines were not commenced until Jan. 1 last. The subscription for the capital of the company was a complete success, as the whole amount was taken up within one month, when the arrangement for purchasing the mines at St. Just were completed. The directors gave instructions to Capt. Carthew, in whom they have the greatest confidence, to commence operations at the mines, by purchasing the requisite machinery to unwater the old mines, and to clear the levels that former workers had opened and developed to so great an extent; these operations, which are fully described in Capt. Carthew's annexed report, have been carried on with the greatest activity, and have fully satisfied your directors they have a valuable property, large tin lodes having been discovered, capable of making returns sufficient to supply 48 heads of stamps for a long period, and, when further developed, will, no doubt, supply sufficient ore for double that number. The sales of tin already made in so short a period, of first-class quality, amounting to 2177*l.*, which fully bear out the promises of the prospectus, and are a strong testimony to the energy and skill of Capt. Carthew. Sufficient has been done to these mines to justify the opinion that the shareholders have a most valuable property; and there can be no reasonable doubt from the indications so well developed that these lodes will continue to improve in depth; that when unwatered to the 40 we shall come in contact with a highly valuable copper lode, and that from the 40 to the 62 the tin lode may be considered intact, as scarcely any part of it has been removed by the old workers. The machinery upon the mine—two steam-engines, 48 heads of stamps—and the dressing floors are in the most perfect condition. Every confidence may now be felt, that the mine is capable of sustaining itself, and leaving profits to accumulate for a dividend.

The CHAIRMAN having referred to the various items in the balance-sheet, stated that he thought proprietors would agree with him that the results secured by the amount of capital expended were of an extremely favourable character. From Capt. Carthew's report it would be seen that during the past nine months more work had been done in St. Just United than in almost any other mine in the county of Cornwall. Six shafts and nine different levels or cross-cuts had been cleared, but to continue the works upon these cross-cuts there would be a considerable delay. It appeared, however, that in these cross-cuts the lodes intersected each other at almost right angles, so that upon reaching the intersections each would be producing paying work. Last week there were sold 11 tons of tin ore, which, together with what had been previously sold, had realised the total sum of 2641*l.*; the whole of that had been actually sold in four months, which, he believed, might be considered as an example in tin mining. Capt. Carthew informed him that there were between 20,000*l.* and 30,000*l.* worth of tinstuff ready to be brought to surface, and that during the successive year he expected the larger part of it would be made ready for market and sold. With the view of inviting discussion, he would now move that the report of the directors and balance-sheet be received and adopted.

Mr. GRIMMETT begged leave to second the proposition.

Mr. T. C. SMITH suggested, as none of the proprietors had made any remarks upon the reports and accounts laid before them, that it might be desirable for them to hear Capt. Carthew's opinion as to the state and prospects of the mine. He could assure them that in Capt. Carthew they had a most energetic and able manager, and he could have no doubt but that it would be interesting to the proprietors to hear from his own lips his opinion as to the future, when they might put any questions to him on the subject that may occur to them.

Capt. CARTHEW said that, in addition to what he had stated in the report (a copy of which had been sent to each shareholder), he had the satisfaction of informing the meeting that two grand discoveries had been made since that report was written. He could assure them that in St. Just United they possessed as promising a mine as any in the county of Cornwall. Since 19 years of age he had been engaged in mining, but he had never seen a company commence operations upon an old mine which had opened equal to the St. Just United. Perhaps, the expenditure had been rather rapid, but he need not inform them that to bring about great results a proportionate outlay must be made. Their manager had asked him whether he could not lessen the expenditure, to which he (Capt. Carthew) replied that he could by stopping some of the levels, and discontinuing sending tin bills; but he was glad to say that the directors had in no way interfered with his operations at the mine, and that it had been his pleasure, as it was his duty, to bring about in the most economical and efficient manner the results which this day had been submitted. There were an additional 16 heads of stamps being got ready, which would make a total of 48 heads; there was a splendid engine, and the property was provided with the most effective means for dressing tin that was adopted at any mine in the county. He could only repeat that in St. Just United they had a great and splendid property; and he believed that every shareholder would be well rewarded for his outlay. He had been astonished at the London market, where shares in mines without even any prospects of making returns had maintained a great value, while the shares in St. Just United had been comparatively neglected. He might, perhaps, mention that the work which the old workers had done in this mine the present company would reap the benefit of it. In a short time they would commence clearing the ground for putting down two tramroads for 100 fathoms long, and there was no doubt that an extra quantity of tin would be returned from those tramroads going through the levels. The manner in which their operations were conducted elicited the admiration of every miner in Penzance, and no less than five mine agents had visited the property to witness the improved method of dressing tin. It was with some pride that he informed the proprietors that their cost of dressing tin was something like one-half of that in any other mine in Cornwall.

Mr. BIRDSEY thought the shareholders were greatly indebted to the agent (Capt. Carthew) for the energetic and successful manner in which he had conducted the company's operations.

Capt. CARTHEW, in answer to a question, stated that just before he left the mine there was discovered under the adit one of the best courses of tin in the mine—it was all in whole ground, and worth 40*l.* per fathom. From under the old 70 fm. level, two men brought on Monday 5*l.* worth of tin. All he hoped was that none of his operations would be interfered with for 12 months, for by the end of that time he confidently believed that he would be able to show results which would great redown to his credit, and productive of profit to the shareholders

Mr. GRIMMETT enquired how many tons of tin per month the mine would be able to return?—Capt. CARTHEW replied that that would depend upon circumstances, but if the mine continued to progress as at present, he thought he might safely say that in six months they would be able to return 20 tons per month.

Mr. GRIMMETT, who had recently visited the property, had much pleasure in endorsing every word which had fallen from Capt. Carthew, both as to the position and prospects of the undertaking; indeed, so satisfied was he (Mr. Grimmett) with his visit, that upon his return to London he considerably increased his stake in the company. He felt satisfied that Capt. Carthew was entitled to their sincerest thanks for the energy and ability with which he had conducted the operations at the mine.

The report and balance-sheet was then unanimously received and adopted.

The CHAIRMAN, in answer to a question, said that he thought it would be the more prudent course to make a call upon the present occasion.

Mr. ANGWIN said it was incumbent upon the present meeting to make a call, so as to put the directors into a fair position to carry on the works with that degree of vigour which had characterised their previous operations; and at the same time a balance in hand would enable them to sell their tin to a very much greater advantage. He congratulated his co-proprietors upon possessing such a valuable property, and stated that in the last month's cost-sheet there was something like 80*l.* for timber and coals, which would be sufficient for the mine for two months. So that the operations during October had been more than met by the sales of tin. He urged the desirability of having a steam-whim upon the top of the hill, placed in such a position as to command the three shafts, and to clear up the engine-shaft, so as to enable them to get down into the kilias. They had at Oates's shaft and at Saveall's lode capital tin, which must be prosecuted; and he hoped the directors would feel it incumbent upon them in a short time to erect 16 or 20 heads of additional stamps. He again congratulated the shareholders upon the success which had attended their operations; and he looked forward to the realisation of the most satisfactory results.

After some further discussion, upon the proposition of the Chairman, seconded by Mr. BERRITT, a call of 5*s.* per share was made.

The retiring directors and auditors were re-appointed, with thanks for past services.

A special vote of thanks was passed to Capt. Carthew for the successful manner in which he had conducted the affairs at the mine.

A vote of thanks to the Chairman terminated the proceedings.

[Shareholders attending meeting represented 2961 shares; proxies, 2190: total, 5151.]

HOLMBUSH MINING COMPANY.

A general meeting of shareholders was held at the company's offices, Broad-street-buildings, on Wednesday,—Mr. R. HALLETT in the chair.

Mr. DUNSFORD read the notice convening the meeting, and the minutes of the last, which were confirmed. The statement of accounts, of which the subjoined is an abstract, were then submitted:—

Labour cost, four months, ending Sept.	£2973	13	5			
Merchants' bills	1051	14	4			
Royalty	55	15	1			
Old calls in arrear	7	4	0			
Club account	10	3	6			
Interest	4	12	9	= £4103	3	1
Copper ore sold	£3277	14	4			
Mundic sold	179	0	11			
Lead ready for sale, computed	380	0	0			
Old materials sold	152	2	2	= 3988	17	5
Leaving debit balance				£ 114	5	8

The balance from the previous account was 722*l.* 13*s.* 5*d.*, which, added to the arrears of call (224*l.* 10*s.*) gives 947*l.* 3*s.* 5*d.*, so that, deducting the 114*l.* 5*s.* 8*d.* loss, as above, there remains 832*l.* 17*s.* 9*d.* to credit to the end of September.

The CHAIRMAN said it was anticipated that they would show a good profit at the meeting, but the last sale was so unfavourable that they had really shown a small loss.

Mr. MOCATTA enquired whether all the tribute was paid?

Mr. DUNSFORD stated that it was, the tribute being invariably carried into the account every two months. In reply to another Shareholder, he continued that the probable cause of the low price was, that they fell in with the Devon Great Consols sale, and, owing, he supposed, to the large quantity of ore sold on the same day, the price was usually lower. It was very seldom, however, that they sold on the same day as the Devon Great Consols.

Mr. MOCATTA thought it would be satisfactory to know what would be the precise deficit to the end of September, so as to ascertain what amount would have to be deducted from the credit balance.

Mr. DUNSFORD said there was nothing to deduct from the balance as shown in the accounts, and which would otherwise have been much larger. The last sale had disappointed them to the extent of fully 300*l.*, but that did not affect the accounts. The lead was computed at a price which the shareholders might rest assured would be realised. Had the price they had calculated for the copper been realised, they would have shown from 250*l.* to 300*l.* profit on the four months' working. He then read the following report from the agents:—

Dec. 8.—The 175 is now getting settled under the slide driving west, and is worth full 15*l.* per fm. The 175 east is producing stones of ore; from its appearance to-day we shall very shortly have an improvement. The 160 west has opened up a good piece of ground for a considerable distance; present end worth 10*l.* per fm. A winze sinking below the 160, west of the lead lode, down 11 fms., has been and is still worth for all the distance sunk 20*l.* per fm.; there is no level within this point for 60 fms.—that is, below it. One stope (or pitch) in the back of the 160, and not within 10 fms. of the end, is worth 20*l.* per fm. We have several other pitches working above this level (six in number) at an average tribute of 6*s.* 8*d.* in 1*l.* We are putting up a rise from the 60 to the 40, to prove a piece of ground over and below it; the value of the lode is not yet known, as we have not taken it down for the last 4 fms. The 20, on Flap-jack lode, is producing stones of ore, and letting out a pretty deal of water, which we consider a good indication. We are putting up a rise from the 40 to the 20, to hole to a good lode of ore driven over. In the adit level, east of cross-cut from Huridown shaft, we have driven 10 fms., and are now under the slide; there is to-day as fine a looking lode in this level, without a course of ore, as can be seen. I may here mention there is no level near this, and may be regarded as a new speculation. We are now clearing the crosscut still further north, to enable us to see our north lodes. I have also decided on clearing the 80, and when done resume the driving of it, so as to prove the western ground; and seeing the enormous quantities of ore which have been taken away at this level to the east, I consider it a great chance of well paying the adventurers for their outlay.—F. PRYOR, R. PRYOR, T. WOOLCOCK, J. BORLASE.

Mr. DUNSFORD said he had received a letter from Mr. Pryor that morning, in which he remarked that he considered the Huridown part of the sett to be worth the entire price of the mine.

In reply to Mr. Harrison, Mr. DUNSFORD stated that the arrears of call, as shown in the previous account, was 224*l.* 10*s.*, and in the present account 50*l.* 10*s.* The 7*l.* 4*s.* called old arrears, were arrears due upon the old shares. Since the account had been made he had received some cash, provisionally that the shares should be restored, so that there was now only 30*l.* 9*s.* due, which was due from only three shareholders, and he believed these would be paid in the course of a few days.

Mr. HARRISON said that if they went on thus there would be no end to restoration. There should have been no restoration after the forfeiture in September.

The CHAIRMAN said that it was a very ungracious act to forfeit shares when it could be avoided, and he should, therefore, move that the shares upon which the calls had been paid should be restored.—Carried unanimously.

Mr. HARRISON would like to refer to another point. There was Crease's debt of 185*l.* He would like to know what they were doing with that?

Mr. PILCHER said that the original sum had been gradually reduced, and that they held security for the residue. They were doing their best to get the money, and it was only by patience that they would get the whole of the residue.

The report and accounts were then received and adopted, and it was resolved that the shareholders owing the 30*l.* 9*s.* should have their shares restored provided they paid their arrears before Dec. 31, and not otherwise. A vote of thanks to the Chairman terminated the proceedings.

LOWER TALDRWS SLATE COMPANY.

The half-yearly meeting of proprietors was held at the office of the company, 32, Bucklersbury, on Tuesday,

Mr. PONSONBY A. MOORE in the chair.

Mr. P. J. KEARNEY (secretary) read the notice convening the meeting.

The report of the directors stated that at the date of the annual meeting, in June last, the company's engineer reported that the pumping-shaft had been sunk 18 yards, and he hoped to have it completed to the proposed depth by the end of June. This had since been done, and the drainage thereby effectually kept under, although the wear and tear of machinery, inseparable from constant day and night work, intervals for repairs being thus necessarily few, has somewhat tried the gear of the only steam-engine which, for economical reasons, has hitherto been in use; but the directors, providing against the injurious consequences which a sudden stoppage of the works from this cause would probably involve, have ordered a small portable engine, to be used in case of emergency, which it is hoped will be found well adapted for its purposes and generally useful. At that meeting shareholders were also informed that, conjointly with the pumping-shaft, the lift incline had been driven onwards and downwards about 6 yards, and was then passing through the shaky portion of the vein which had so much disappointed them. During the interval, the extension of this incline has been steadily prosecuted, and the excavations in connection with it have demonstrated, beyond reasonable question, the existence of an ample sufficiency of superior slate rock, confirmatory of the engineer's unvarying opinion; and the directors, although, of course, unable to name any certain period within which dividends may be relied on, yet, taking into consideration the present extremely promising appearance of the rock already exposed, and the daily increasing evidence of the value and capabilities of the quarry, feel fully justified in assuming that, within a very few months, a regular yield of marketable slates may be expected in aid of its extended development. This being the half-yearly meeting, no balance-sheet is presented; but it is gratifying to state that the call made in July last is being, on the whole, satisfactorily met, and that there would seem to be no reason to apprehend either delay or detriment from any temporary suspension of the necessary funds. The directors themselves, fully satisfied of the genuine character of the property, and supported in their opinions by the undiminished confidence of their engineer, believe that due time and continued cordial co-operation on the part of shareholders are alone required to realise the great resources of the quarry, and, by the best of all possible tests, to substantiate their own faith in its ultimate success as a sound commercial undertaking.

The report of the engineer (Mr. G. L. Fuller, C.E.), was also taken as read.

The CHAIRMAN said—Upon the present occasion he rose with certainly much more pleasure than he had upon any former occasion to draw the attention of the shareholders to the report, because he believed they might now safely say that daylight could be seen through the tunnel, and that which they had so hoped for, but about which they had been several times disappointed (and the disappointments had been as great to the directors as to the shareholders, for their interests were identical), was at length likely soon to be realised. The directors could now speak much more hopefully than they had ever before been enabled to do, for they knew exactly where the slate was, and that it could be worked profitably. Their engineer would inform them that in about three or four months from the present time they would be making slates—which was the great point to be arrived at in every slate quarry. Some quarries required a much longer time for developing than others; but a few commenced slate-making almost immediately, and they hoped that the Lower Taldrws would be one of the few. There were some that had been in course of development for three or four years, with all the capital called-up and expended, and more capital had been raised before they were brought into full working order, and paid for themselves. The fact was, if slate quarries did not pay when they had been brought into full working order, they never would pay. Now, there was every reason to believe that their company would be brought not only into full working order before the capital was expended, but that slate-making would be commenced upon an extensive scale. The drifts had gone through the hard part of the rock, which had occassioned so much trouble, and, at a distance of 30 ft. from the surface, very excellent slate had been found, of a better quality than had before been produced; and in about a week from the present time they would be again driving in solid slate-rock. Upon that point a letter had that morning been received from the quarry, in which they were informed that the drift was now advanced to a distance of 32 feet, and getting into such solid slates as must convince the most sceptical of the genuineness of the quarry. It was the usual course in slate quarries for the quality of the slate to improve as the workings were extended in depth. He believed their engineer would tell them that in about two months they would commence slate making.

Mr. G. L. FULLER (the company's engineer) said he could hardly endorse two months, unless a large amount of money was expended, and a greater number of hands employed, for they must uncover a considerable space before they could commence to work slates; but he thought he might safely say that they would begin to make slates from the top portion of the rock in about three of four months.

The CHAIRMAN said, as the present was but a half-yearly meeting, no balance-sheet would be presented; but he might state that there were total available assets amounting to 9500*l.*, of which 5000*l.* was upon the unallotted shares. Having stated that he would be glad to afford any additional information, he concluded by moving the reception and adoption of the report.—The Rev. Mr. WALDRON seconded the proposition.

Mr. BEISLEY enquired if the engineer thought their present capital would be sufficient to enable the company to pay its way by making slates?

Mr. G. L. FULLER replied that it was rather difficult to speak positively, because the present drifts were of a small width, and they could not possibly say how they ran until the ground was absolutely thrown open and cut down; but it was a very rare occurrence in the valley for the "posts" to run close together. And another reason which induced him to think it was not likely to soon meet with a post, was the facts stated in the letter which the Chairman had just read. They had now got in something like 22 feet, so that they had now a face of like 20 ft., which would be quite sufficient for them to begin to work upon. He should recommend (as he did 12 months since) to uncover as quickly as possible, and cut down through the slate behind the post. When they had removed the bottom of the top drift they might consider that below that slate-making could be profitably carried on. Above that he considered all the rock as so much uncoverings; and, if good slates should be got, they could not be called other than top rock. From the results already achieved, he should imagine that for about one-half the estimate he made 12 months since the company would be making slates regularly. He should recommend the uncovering a certain portion, and complete the drift through; that would cost about 70*l.*

Mr. CARTTAR enquired the time it would occupy?—Mr. FULLER replied that that would depend upon the number of men employed, and labour just now was somewhat scarce. At about the end of the year the men would be employed in driving the heading, at the rate of 18 in. per day.

Mr. PATTISON enquired from what part of the property the slates were taken which were then in the room?—Mr. FULLER replied that they were taken from the top drift. It was excellent slate, not only in colour, but in joints.

Mr. BEISLEY enquired the value per ton of the slates now produced?—Mr. FULLER replied about 3*l.*, according to the present price. The average price would be about 2*l.* or 2*l.* 10*s.*

Mr. PATTISON asked if the money in hand would be sufficient for the current expenses before they got down to paying slates, or whether they would require additional capital?

The CHAIRMAN replied that they had 1500*l.* unexpended of the call last made, and there was 3000*l.* yet to be called up of the capital subscribed, and there was 5600*l.* of unallotted capital.

Mr. FULLER said that the 1500*l.* would be sufficient to get down to the slates, to take off sufficient top to give a fair face for slate making.

The CHAIRMAN assumed that the additional expenditure of the uncalled 3000*l.* would get them into a good slate making condition.

Mr. FULLER hoped such would be the case; but until they had taken off the ground they could not see the width. Judging from the trials made, they would have a good width, and he thought very few would give an adverse opinion.

The CHAIRMAN said, after those steps had been taken the directors would be in a position to dispose of the remainder of the shares.

Mr. PATTISON: Which they might never want to do.

Mr. FULLER could hardly endorse that opinion, because they would require means to enlarge the quarry. If they wanted to place the property in a healthy state, they must open certain spaces, to go on with a bargain. The more bargains there were, the more profits would be realised.

Mr. BANCKS asked how many men could be employed?—Mr. FULLER said that would depend entirely upon the quantity of uncovering. With the 1800*l.* they would not be able to uncover more than three bargains, which would employ 15 slate-makers. It was generally reckoned every man made a profit of something like 60*l.* to 80*l.* per annum.

The report was then unanimously received and adopted.

A cordial vote of thanks to the Chairman and directors terminated the proceedings.

WEST PAR CONSOLS MINING COMPANY.

A general meeting of shareholders was held at the offices of the company, Bishopsgate-street Within, on Wednesday,

Mr. JARDINE in the chair.

Mr. J. H. MURCHISON (the secretary) read the notice convening the meeting, and the minutes of the last were read and confirmed.

The cash account made up to Dec. 10 showed a balance at the bankers of 73*l.* 17*s.* 11*d.*, and a statement of receipts and expenditure, including September cost, showed a balance of liabilities over assets of 137*l.*

The report of the agent was read, as follows:—

Dec. 6.—Since our last general report we have driven the 65 end, east of Dawkes's shaft, 19 fms. 5 ft. 6 in.; the lode has varied in size from 1 to 2¼ ft. wide, yielding tin of low produce, with a small portion of copper ore; it has recently made a splice, and is small and unproductive, but water is flowing strong from the end, which is an indication of the lode becoming larger; there has been a rise put up in the back of this level, a short distance behind the end, and effected a communication with the tributers' bottoms. The 65 is now well ventilated, and can be driven a great distance beyond this rise. The copper part of the lode in the bottom of the 55 is small at present, but the tin part is improved, being 2½ ft. wide, yielding 2 cwts. of tin per 100 sacks; this end is about 9 fms. in advance of the 65; the lode is large, and has a very favourable appearance for the whole driving; and a pitch is now working in the back, further east than the present end. The 45 end has been driven 7 fms. 3 ft. 6 in.; the lode will average 1¼ ft. wide, of a very promising character, producing good saving work for tin. A winze has also been sunk 3 fms., and effected a communication with a rise in the 55, which has well ventilated both these levels, and enabled us to work the ground to great advantage; we have also risen 4½ fms. in the back of this level; the lode is 2 ft. wide, yielding upwards of 3 cwts. of tin per 100 sacks, a very promising one. The ground is whole from the back of this level to surface for 40 fms. inlength; there have been large quantities of tin risen from the shallow levels in the adjoining sett. I have no doubt this will open out a large and productive piece of tin ground. We shall complete the 30 plat, east of Dawkes's, in a few days, when we shall have to drive about 6 feet to get into the lode before we can commence on its course; we shall push on this end with all speed, as I consider it a good speculation. We have six tribute pitches working at the different levels, the work breaking from them averaging from 1½ to 2 cwts. of tin per 100 sacks. In order to further prove the mine, I recommend that Dawkes's shaft be sunk (say) 20 fathoms, which can be done, without incurring a great expense, with the present engine. The shaft will not require cutting down, being large enough to carry a single rod; and there will be no pump-work required above the 65; also, driving the 65 end, east of Dawkes's; to continue the 45 rise, and drive the 45 end east. These works will, from present appearances, successfully develope the mine.—W. WOOLCOCK.

The CHAIRMAN having moved the adoption of the report and accounts, thought that each shareholder would agree with him in considering that the prospects at the mine had so considerably improved as to encourage a further prosecution of the property; but if any shareholder wished for any information more than that contained in the report, Capt. Woolcock, who was present, would be glad to furnish it. So far as the finances were concerned, he might inform the meeting that he had that morning gone through the accounts and compared them with the vouchers, and had found them correct.

Capt. WOOLCOCK (in answer to questions) stated that since the last meeting the mine had considerably improved. In the rise above the 45 they had got a very kindly lode. The piece of ground above that level had never been tried. From above that level, in the adjoining sett, large quantities of tin had been returned. As to the sinking of the shaft, that would somewhat increase the monthly cost, but certainly not more than 25*l.* per month, as he would take the six men from the 65, and put only four men in the latter end.

The SECRETARY stated that the merchants' bills (in the account just presented) were charged up to the end of September, and that the cost for October was 227*l.*

A SHAREHOLDER enquired of Capt. Woolcock if there were any merchants' bills not charged?—Capt. WOOLCOCK replied that every item was charged each month.

A SHAREHOLDER enquired what Major Carlyon had done with respect to the dues?

The SECRETARY replied that nothing had yet been arranged.

The CHAIRMAN enquired when Capt. Woolcock proposed to commence sinking the shaft?—Capt. WOOLCOCK replied that would take about two months. All the necessary preparatory work, such as the cutting of the bob-plat, &c., after which he calculated to be able to sink between 2 and 3 fathoms monthly; but the shaft would be sunk upon the course of the lode, so that it would be proved as their operations were extended.

A SHAREHOLDER drew attention to the favourable position of the company's property, being adjoining Par Consols, which mine had yielded large returns and profits, and still paying good dividends; and from a circular which had recently been issued he learnt that their own property (West Par) had yielded upwards of 9000*l.* worth of tin and copper, the main portion of which had been raised from the 45.

The SECRETARY said the improvement in the 65 to which Capt. Woolcock had referred corroborated the opinion which Capt. C. Thomas gave lately when he inspected the property, and that authority, in referring to their prospects in depth, said if the sinking of Dawkes's shaft required the erection of another steam-engine, he should hesitate to take the responsibility of recommending it to be done; but if it could be sunk (as he believed it could be) with the present engine, he thought the trial by sinking some 10 or more fathoms with the small outlay required was a good speculation. He (Mr. Murchison) wished also to call the attention of shareholders to the, perhaps, still more favourable opinion which had been expressed by Capt. Puckey, of Par Consols. He says, that "although the lode in the 65 has hitherto been poor, yet it is of a masterly size; and knowing the character of the lode to be precisely the same as the tin lodes in the adjoining mine, Par Consols, I do not hesitate again to say the mine will not be fairly tried before it is sunk so as to prove the lode at deeper levels; as the 60 in Par Consols was one of the poorest, while the 70 and 80 were two of the richest levels we had for tin in that mine." Capt. C. Thomas gives the same advice, remarking, "many lodes of great value have had partial failures, and by deeper working have been found of greater value than before."

Capt. WOOLCOCK stated that they had about 6 feet to drive to cut the lode in the new 30 fm. level. He might state with regard to the improvement in the 65, that on Monday last, when underground, the lode was then 6 in. wide, with water freely flowing, but on Tuesday morning the lode had increased from 6 to 18 in., and very kindly.

The SECRETARY said that he had referred to the opinion of Capt. C. Thomas with reference to the 65; the opinion which he then gave seemed likely to be confirmed.

A resolution was passed to the effect that application be made to Major Carlyon to forego the amount now owing for dues, and to reduce the rate for the future to 1-24th, in consequence of the large outlay without any profit hitherto.

The report and accounts having been received and adopted, a call of 1*s.* per share was made.—A vote of thanks to the Chairmen terminated the proceedings.

CARADON CONSOLS MINING COMPANY.

A quarterly meeting of shareholders was held at the company's offices, Austinfriars, on Wednesday,—Mr. BUCKLAND in the chair.

Mr. E. KING (the secretary) read the notice convening the meeting, and the minutes of the last were read and confirmed. A statement of accounts for the three months ending with costs for September was submitted, which showed—

Balance last audit	£ 20	2	7			
July mine cost, merchants' bills, &c.	206	13	3			
Aug. ditto	199	4	5			
Sept. ditto	233	15	6	= £659	15	9
Call received				571	5	0
Leaving debit balance				£ 88	10	9

The report of the agent was read, as follows:—

Dec. 9.—During the past quarter we have fixed a new plunger-lift at the engine-shaft, with main rods, footway, and other necessary work complete. The shaft is now in full course of sinking, and is some 3 fms. below the 68. We purpose urging on the sinking 9 fms. deeper for an 80 fm. level as rapidly as possible. The lode in the shaft is about 18 in. wide, with good spots of ore embedded in fluor-spar; but, owing to the cross-course being now in the shaft, the lode is somewhat unsettled. There has been nothing very important met with in driving on the engine lode during the past three months. The lode has been generally very well defined and kindly, consisting chiefly of fluor-spar, good stones of ore, and large quantities of mundic. This lode shows an improved appearance in the 68, when compared with any of the shallow levels. If we have not a more productive lode in the end very soon I think it will be advisable to suspend the driving and sink a winze on its course below the 68, so as to prove it deeper. The south, or main lode, which is 15 fms. south of engine-shaft, has not been driven on to any great extent since your last general meeting. This is a very kindly looking lode, and has produced saving work for the distance driven on (about 8 fms.); but as the ground is hard the ore contained in the lode, although promising, is not sufficient to pay for working. We have, therefore, suspended the driving, and have commenced to sink on it. The winze is down 4 ft. below the 68. There is not yet any great change in the lode, other than it seems to carry better-defined walls, and looks promising to become more productive in depth. The cross-cut is extended but a few fathoms south of this main lode in the 68; we hope, however, as soon as the shaft is down to the 80 fathom level to put out a cross-cut in that level to intersect the whole of the South and West Caradon south lodes, and also the lodes that pass through East Wheal Agar, which are standing to the south of our shaft. These south lodes, when intersected in the 80 fathom level, will be proved at a fair depth, and in a kindly channel of ground, near the junction of the granite and kilias. We have driven 9 fms. on the great north lode, but as this lode is large, and composed chiefly of gossan, we have thought it better to suspend operations here, and see whether it will be worthy of a more extensive trial at the next level below. The 68 cross-cut north is being forced on by a full pare of men, and is driven to the point where I expect to intersect Menadue lode; but a very slight variation in its dip or underlie below the 54 would account for driving a little further in the 68 than first calculated on. The end, however, seems to be getting wet, and showing such indications as to induce me to believe that the lode is not very far distant. We are keeping the men working extra time, and are making every effort to reach the lode as soon as possible. Owing to the 54 being badly ventilated, we have only had two men driving east on the Menadue lode, consequently our progress has been slow. We have a winze sinking on the cross-course (now 7 fms. deep) with the view to ventilate the 54 and the 68 fm. levels. The Menadue lode, in the 54 east, is a large kindly lode, much as it has been for the whole of the distance driven on. We have lately had some kindly orey branches in this end, but hitherto the lode has not been so productive as the kindly indications warranted one to expect; the ground, however, seems very congenial, and the lode in the end still looks very inducing. The engines are doing good duty, and the pitwork is all in good working order, and I do not anticipate wanting any extra materials or new pitwork to enable us to sink the shaft to the 80 fm. level.—W. RICH.

The CHAIRMAN said it had been seen by the foregoing report that during the past quarter no discovery of importance had taken place; but he thought they would agree with him in considering that their prospects in depth were of a favourable character. There appeared to be a uniformity of opinion among all mine agents as to the great probability of cutting the Menadue lode at the 68. He was glad to see that Capt. Rich was pushing on this point with the utmost vigour. He also regarded the sinking of the winze from the 54 to the 68, upon Menadue lode, as an important point of operation, because when a communication was effected with the lower level the end would be ventilated.

Mr. R. HAWKE enquired if all the items of the new pitwork, timber, &c., were charged up in the accounts just submitted?—The SECRETARY replied that the whole of the necessary pitwork had been received, and charged in the balance-sheet; and no further expenditure in the way of machinery would be required. They had now sufficient pitwork on the mine to take them down to the 88. Considering the nature of the ground at the bottom of the shaft, he thought that between 2 and 3 fms. would be sunk monthly.

Mr. E. COOKE thought that their agent was pushing on the operations with energy, and he (Mr. Cooke) certainly regarded the speculation as one of no mean character.

The SECRETARY (referring to the financial position of the company) stated that the expenditure during the past quarter had been about 200*l.* per month; and looking at the estimated returns and expenditure of the ensuing three months, the committee were of opinion that a small call should be made upon the present occasion. It was thought that 12s. 6d. per share would be amply sufficient to carry them on during the quarter; but should any discovery be made—which was by no means improbable—the returns would go to increase the assets of the mine.

Mr. R. HAWKE remarked that the Menadue had been the best lode in West Caradon, as it had also been in Caradon Consols; and, so far as he was concerned, he most certainly looked forward with confidence to the cutting of that lode bringing about the most desirable results.

Upon the proposition of Mr. DOUDARD, seconded by Mr. BALSTON, the report was received and adopted, and the accounts were passed and allowed.

The CHAIRMAN having stated that the committee had increased the salary of Captain Rich two guineas per month, a confirmatory resolution was passed.

Mr. E. COOKE enquired up to what date had the costs been charged?—The SECRETARY replied up to the end of September. He explained that some delay had taken place in the sinking of the shaft, from the decomposed nature of the cross-course; but that had been passed through, and the shaft was now being rapidly sunk.

A call of 12s. 6d. per share was made. The committee of management were re-elected.

A vote of thanks to the Chairman terminated the proceedings.

THE COPPER AND ALKALI TRADES.

COMPULSORY CONDENSATION OF NOXIOUS VAPOURS.

The report of the committee appointed during the last session of Parliament for enquiring into the injury resulting from Noxious Vapours evolved in certain manufacturing processes is one in which so large a number of our readers are interested, that it may be well to record the extent of the injury, and to consider what may be done to abate the nuisance complained of, without pecuniarily affecting the manufacturers engaged in those branches of industry which restrictive legislation on the subject would affect. An interesting article on the report is published in the last part of the "Medical Critic and Psychological Journal," but as the question is regarded more from a medical than a commercial point of view, comparatively little trouble is taken to solve the all-important problem—how can the manufacturers remedy the evil without loss to themselves? We are told that the vapours which are most manifestly pernicious in their effects are the muriatic acid gas, evolved in the manufacture of soda; nitrous acid, evolved in the manufacture of sulphuric acid; sulphuretted hydrogen, evolved in the manufacture of ammonia salts, when conducted in a peculiar way; and sulphurous acid, evolved in the smelting of copper and lead—the muriatic gas apparently causing the greatest injury.

The justice of the remark, of the committee that "It is obviously the duty of the Legislature to be very cautious in dealing with a trade which employs so large a portion of the country's manufacturing industry" as the alkali trade will be apparent when it is considered that the trade amounts to 2,500,000*l.* per annum, that upwards of 2,000,000*l.* of capital is invested in it, that it employs nearly 20,000 hands, to whom nearly 1,000,000*l.* is annually distributed in the shape of wages, and that nearly 100,000 souls are dependent on it for their livelihood; but, on the other hand, we cannot object to the declaration, that "it is difficult to exaggerate the amount of injury to the adjoining districts which in some instances is caused by the neighbourhood of these works. Now, it is admitted both by scientific men and by the manufacturers themselves, that the pernicious effects arising from alkali works may be entirely prevented. The modes adopted are various, but all involve one principle—the condensation of the muriatic gas evolved by passing it through towers filled with coke, or other porous materials, and subjected to a constant stream of water: a similar process is made use of in the manufacture of sulphuric acid, the effects of which, if the gasses were permitted to escape, would be equally injurious to vegetation; but whilst the sulphuric acid is of so much commercial value that it is the interest of the manufacturer to see that the gases are perfectly condensed, the production of muriatic acid exceeds threefold the effective demand for it, and hence much gas is suffered to escape. The committee, therefore, recommend legislation which shall render the complete condensation of all the deleterious gases referred to compulsory, and the manufacturers would not, it appears, object to such a measure, provided sufficient time were given them to apply the remedy.

Now, it fortunately happens that the muriatic gas, for the profitable disposal of which there is the greatest difficulty, is precisely that for which a large demand could readily be created: the only question is that of cost. Provided muriatic acid, containing 15 per cent. of real acid, could be delivered at the Cornish and Devon ports at from 30s. to 35s. per ton, an almost unlimited demand would spring up for it, and not only would the alkali manufacturer turn a substance now wasted to good account, but he would assist the utilisation of another waste substance, and thus, whilst removing an evil, some hundreds of thousands per annum would be added to the value of our industrial statistics.

GOLD IN NEW ZEALAND.—His Excellency the Earl of Mulgrave, Major General Hastings Doyle, Mr. A. M. Uniacke, and other distinguished persons visited Mr. Michell's engineering works, for the purpose of examining the new amalgamating machine lately introduced by Mr. Rickard. The machine was put in motion, and its *modus operandi* illustrated and explained by Mr. Rickard, showing the manner on which gold is withdrawn from the quartz and retained by the mercury as it passes quietly through the machine (after leaving the grinder) in the almost impalpably fine condition so essential to perfect amalgamation. The distinguished visitors expressed themselves highly pleased with the simplicity and facility of the operation; which, while extracting all the gold susceptible of amalgamation without breaking up or wasting mercury, prevents it being tampered with or purloined, by being effectually secured under lock and key. We observed in the *Mining Journal* a notice of this machine by Mr. Redwin, F.G.S., in a paper read at the recent meeting of the British Association at Cambridge, on Gold Mining in Wales, in which he states that, by its use, quartz containing only 8 to 10 dwts. of gold to the ton will yield a handsome profit. We are informed that another experiment will be made in a few days, for the satisfaction of the Chairman and directors of the Chebucto Company, who contemplate its adoption in the works in course of erection at their mines at Laidlaw's. It may be added that, in consequence of Mr. Rickard having dispensed with a patent, and thrown the invention open to the public, this machine, with the grinder recommended by Mr. Rickard, can be manufactured at Mr. Mitchell's works, at a cost lower than the common Cornish stamps, which do not crush the quartz fine enough to secure all the gold by amalgamation. Several of the mining companies, who have not made preparations for winter work, are now closing their operations for the season, and considerable quantities of gold have lately been brought to town. Upwards of 130 lbs. weight from Sherbrooke and Wine Harbour arrived by the packet on Monday, and we hear of more coming from the same quarters. A good deal has also been brought in from the Renfrew district, and more soon expected. We have just seen some rich specimens of gold quartz from the Boulder lot, at Messrs. Cogswell and Forsyth's.—*Halifax Star.*

OXYGEN GAS.—I have carefully perused the prospectus of the Oxygen Gas Company, and have also read your notice of the undertaking, in which you state that the quality of the gas has now been so far improved that it contains 80 per cent. of oxygen, and, consequently, only 20 per cent. of nitrogen. As I have not had an opportunity of seeing the gas in use I should be glad to learn whether it is burned in the state above described without carburation or otherwise. I do not doubt that it requires carburation, for without carburation I cannot see how it would burn at all, neither nitrogen nor oxygen being combustible gasses. Will the inventors state in what respect their gas differs from hyponitric acid gas, and whether it stains the skin an orange colour, and destroys its texture in the same way as nitrous acid? If so, at what price could the gas in a condensed or liquid state be supplied, as it could be most economically used in treating copper pyrites, which sulphuric and hydrochloric acids will not touch.—ALCHEMIST.

NOXIOUS VAPOURS FROM ALKALI WORKS.—The fact stated in your article on this subject in last week's Journal, that muriatic acid is continually being thrown away at our alkali works, because there is no demand for it has, no doubt, taken many by surprise, as it did me; and I quite agree with your remark, that if it could be delivered free in Cornwall at 30s. per ton some hundreds of tons might be disposed of annually, and in proportion as the price could be reduced below this so would the demand increase. Will any of your readers connected with the alkali trade kindly state the price at which it could be at present delivered free in Cornwall? By doing so they will do more than all the Acts of Parliament to prevent its waste, provided, of course, that the price be not materially higher than that named.—SPECULATOR.

LINING PUDDLING-FURNACES.—Mr. R. Mushet, of Coleford, proposes to employ ilmenite, which is the refractory ore of titanium, either with or without the admixture therewith of bulldog, to form the fettling of puddling-furnaces. He seems to regard the bulldog as quite of secondary consideration, the ilmenite being the material which he considers the most durable. The melting of minute particles of such a fettling would certainly not injure the quality of the iron.

WIRE-ROPES.—An invention has been patented by Mr. Geo. Bedson, of Manchester, which consists in the employment of flat wire in the manufacture of wire-rope. In preparing wire for ropes he causes it after it passes hot from rollers to be wound on a drum, thus affording two points of suspension, between which he cools it, and so causes a contraction, by which the material becomes straightened.

SAFETY-FUSE.—A new company has been formed for manufacturing safety-fuse, and are now building a factory at Newton, near Troon, in the parish of Camborne, to carry on the business.

NEW LUBRICATING GREASE FROM COAL TAR.—Mr. W. D. Ruck, of King William-street, proposes to obtain a good lubricating grease from coal tar, coal oil, creosote, or dead oil. He treats the material to be operated upon with sulphuric or other acid. He next frees the mixture from the acid, heats it, and runs it into cold water. It is well stirred, and the grease forms in lumps at the bottom of the vessel. The lumps may be pressed if considered desirable to remove the water.

ICELANDIC FUEL.—The turf is inferior; wood is too scarce and valuable to be much used for fuel. Coal costs 5*l.* per ton, is retailed in small packages at about 2d. per pound, and is only used in smithies. When turf is not available, the Icelanders, like the Arabs, burn dried cows' dung; and on the coast, where even that is scarce, they use the dried carcases of sea-fowl. Why do they not burn dried sea-weed, which is extensively used for fuel in the Channel Islands? The scarcity of fuel tempts people to crowd together for heat; sometimes 15 or 16 people in one small sleeping apartment, and that often placed over another were cattle are kept. The state of such an atmosphere may be imagined, while many dirty habits and the frequent recourse to stimulants are thus accounted for. Nor will anyone wonder much, although there were no other causes, that in one district of the south 75 per cent. of all the children born die before they complete their twelfth month.—*Symington's Pen and Pencil Sketches of Faroe and Iceland.*

A STEEL MERCHANT SHIP.—Messrs. Jones, Quiggen, and Co., of this town, have just contracted to build of steel, for a Liverpool house, a vessel of 1200 tons. This will be the first merchant vessel built of that material. The plates will be manufactured at the Mersey Steel and Ironworks. We believe that experiments on Messrs. Jones's angular target are about to be resumed at Shoeburyness, when the Whitworth gun will be employed to test its stability. The target will be same weight per foot as the Northumberland target, so mutilated by the Whitworth shell.—*Liverpool Albion.*

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PUBLIC TEST OF WIRE-ROPE.—The SUPERIOR QUALITY of GARNOCK, BIBBY, AND CO.'S WIRE-ROPE was FULLY PROVED by a RIVAL MANUFACTURER at the LIVERPOOL PUBLIC TESTING MACHINE, on the 29th of October, 1860, on which occasion GARNOCK, BIBBY, and Co.'s ropes were found to be the STRONGEST of all the TWELVE SAMPLES from different makers then tested, as reported in the papers of the day. For example:—

(Certified by Mr. William Macdonald, superintendent.)

Sizes.	Garnock, Bibby, and Co. Tons c.	Corresponding sizes from other manufacturers. Tons c.	Tons c.
3½ in.	18 5*	16 10	11 10
2½ in.	8 15*	7 15	5 0

Remaining sizes with similar results.

* Samples taken promiscuously from stock by a rival manufacturer's agent.

GARNOCK, BIBBY, AND CO.,
SWAN HEMP AND WIRE ROPE MANUFACTURERS,
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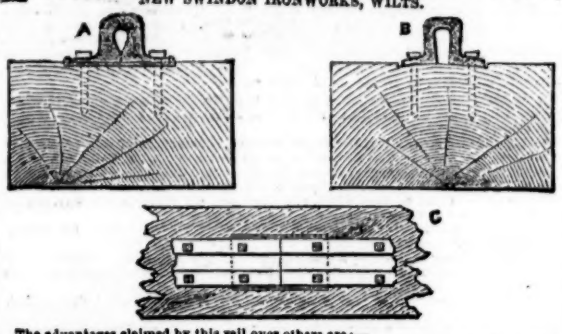
NEW SWINDON IRONWORKS, WILTS.



The advantages claimed by this rail over others are:—

1.—Its having a flat or solid surface its whole breadth to bolt down to the timbers (see section A).

2.—The impossibility of its collapsing, as is the case with all other bridge rails (see section B).

3.—Its being perfectly rigid. The bolts, therefore, remain firm in the timber till the rail is quite worn out.

4.—Its effecting a saving in the timbers of from 50 to 100 per cent., as there is no liability of the timbers being torn and splintered by their shifting, as is shown in section B, where the heads of the bolts are frequently torn off.

5.—Its shape admits of its being rolled at a less weight to the yard, without diminishing its strength or durability.

This rail has been submitted to several of the principal engineers and practical men of the day, who have pronounced it the best that has been produced. It carries the palm for lightness, durability, and consequently cheapness.

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500 gallons	48 × 84	£10 10 0	75 gallons	27 × 42	£ 3 15 0
400 „	43 × 83	9 9 0	50 „	24 × 36	2 15 0
300 „	37 × 84	7 7 0	40 „	21 × 38	2 5 0
252 „	35 × 79	6 10 0	30 „	21 × 30	1 15 0
200 „	33 × 72	6 0 0	25 „	19 × 30	1 5 0
150 „	30 × 66	5 5 0	20 „	19 × 26	1 2 0
100 „	27 × 55	4 10 0	10 „	15 × 21	0 15 0

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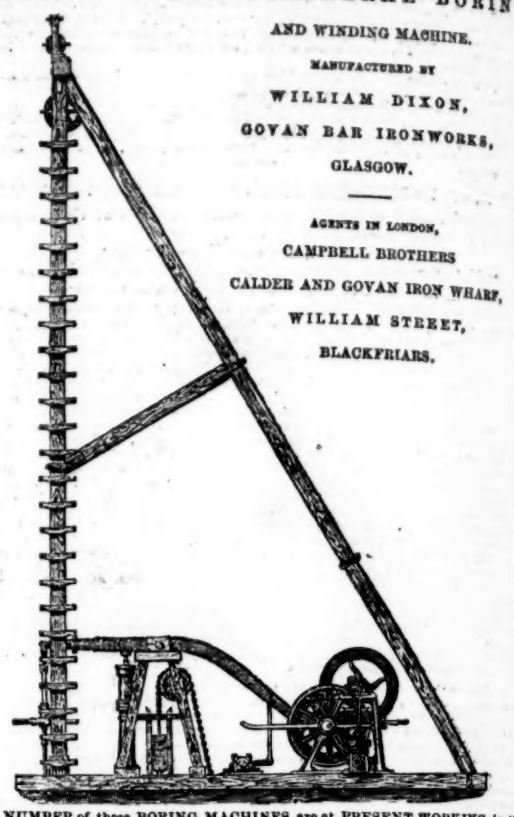

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